

What is claimed is:

- 1 1. A system for diagnosing and monitoring myocardial ischemia for
2 automated remote patient care, comprising:
 - 3 a database storing a plurality of monitoring sets which each comprise
4 recorded measures relating to patient information recorded on a substantially
5 continuous basis;
 - 6 a server retrieving and processing a plurality of the monitoring sets,
7 comprising:
 - 8 a comparison module determining a patient status change by
9 comparing at least one recorded measure and time from each of the monitoring
10 sets to at least one other recorded measure and time from another monitoring set
11 with both recorded measures relating to a same type of patient information
12 recorded at different times; and
 - 13 an analysis module testing each patient status change for an
14 absence, an onset, a progression, a regression, and a status quo of myocardial
15 ischemia against a predetermined indicator threshold, including at least one
16 hysteresis threshold, corresponding to same type of patient information as the
17 recorded measures which were compared, the indicator threshold corresponding
18 to a quantifiable physiological measure of a pathophysiology indicative of
19 myocardial ischemia and the hysteresis threshold corresponding to a diagnosis or
20 treatment based on a duration and degree of the patient status change.
- 1 2. A system according to Claim 1, further comprising:
 - 2 an analysis submodule managing the myocardial ischemia and outcomes
3 thereof through administering at least one of anticoagulation, antiplatelet drugs,
4 beta-blockade, coronary vasodilators, afterload reduction, lipid lowering drugs,
5 electrical therapies, and mechanical therapies.
- 1 3. A system according to Claim 1, further comprising:
 - 2 a database submodule periodically receiving a monitoring set comprising
3 recorded measures for an individual patient, each recorded measure in the

4 monitoring set having been recorded by at least one of a medical device adapted
5 to be implanted in an individual patient and an external medical device proximal
6 to the individual patient when the device measures are recorded and storing the
7 received monitoring set in the database as part of a patient care record for the
8 individual patient.

1 4. A system according to Claim 3, further comprising:
2 a set of further indicator thresholds, each indicator threshold
3 corresponding to a quantifiable physiological measure used to detect a
4 pathophysiology indicative of diseases other than myocardial ischemia;
5 a comparison submodule comparing each patient status change to each
6 such further indicator threshold corresponding to the same type of patient
7 information as the at least one recorded measure and the at least one other
8 recorded measure; and
9 an analysis submodule testing each patient status change against each such
10 further indicator threshold corresponding to the same type of patient information
11 as the recorded measures which were compared..

1 5. A system according to Claim 1, further comprising:
2 a comparison submodule determining a change in patient status by
3 comparing at least one recorded quality of life measure to at least one other
4 corresponding recorded quality of life measure.

1 6. A system according to Claim 1, further comprising:
2 a set of stickiness indicators for each type of patient information, each
3 stickiness indicator corresponding to a temporal limit related to a program of
4 patient diagnosis or treatment;
5 a comparison submodule comparing a time span occurring between each
6 patient status change for each recorded measure to the stickiness indicator relating
7 to the same type of patient information as the recorded measure being compared;
8 and

9 an analysis submodule determining a revised program of patient diagnosis
10 or treatment responsive to each patient status change occurring subsequent to a
11 time span exceeding the stickiness indicator.

1 7. A system according to Claim 1, further comprising:
2 a database module retrieving the plurality of monitoring sets from one of a
3 patient care record for an individual patient, a peer group, and a overall patient
4 population.

1 8. A system according to Claim 1, further comprising:
2 the database further storing a reference baseline comprising recorded
3 measures which each relate to patient information recorded during an initial time
4 period and comprise either medical device measures or derived measures a
5 database submodule obtaining at least one of the reference baseline.

1 9. A system according to Claim 1, wherein the indicator thresholds
2 relate to at least one of a finding of reduced exercise capacity, respiratory distress
3 and angina.

1 10. A system according to Claim 9, wherein the indicator thresholds
2 relating to the finding of reduced exercise capacity are selected from the group
3 consisting of decreased cardiac output, decreased mixed venous oxygen score,
4 and decreased patient activity score.

1 11. A system according to Claim 9, wherein the indicator thresholds
2 relating to the finding of respiratory distress are selected from the group
3 consisting of increased respiratory rate, decreased transthoracic impedance, and
4 increased pulmonary artery diastolic pressure.

5 12. A system according to Claim 9, wherein the indicator thresholds
6 relating to the finding of angina are selected from the group consisting of
7 increased ST segment, decreased ST segment, increased myocardial creatinine
8 kinase, increased troponin, increased coronary sinus lactate, changed myocardial
9 wall motion, ventricular tachycardia, T wave changes, and QRS changes.

1 13. A method for diagnosing and monitoring myocardial ischemia for
2 automated remote patient care, comprising:
3 storing a plurality of monitoring sets which each comprise recorded
4 measures relating to patient information recorded on a substantially continuous
5 basis in a database;
6 retrieving a plurality of the monitoring sets from the database;
7 determining a patient status change by comparing at least one recorded
8 measure and time from each of the monitoring sets to at least one other recorded
9 measure and time from another monitoring set with both recorded measures
10 relating to a same type of patient information recorded at different times; and
11 testing each patient status change for an absence, an onset, a progression, a
12 regression, and a status quo of myocardial ischemia against a predetermined
13 indicator threshold, including at least one hysteresis threshold, corresponding to a
14 same type of patient information as the recorded measures which were compared,
15 the indicator threshold corresponding to a quantifiable physiological measure of a
16 pathophysiology indicative of myocardial ischemia and the hysteresis threshold
17 corresponding to a diagnosis or treatment based on a duration and degree of the
18 patient status change.

1 14. A method according to Claim 13, further comprising:
2 managing the myocardial ischemia and outcomes thereof through
3 administration of at least one of anticoagulation, antiplatelet drugs, beta-blockade,
4 coronary vasodilators, afterload reduction, lipid lowering drugs, electrical
5 therapies, and mechanical therapies.

1 15. A method according to Claim 13, further comprising:
2 periodically receiving a monitoring set for an individual patient, each
3 recorded measure in the monitoring set having been recorded by at least one of a
4 medical device adapted to be implanted in an individual patient and an external
5 medical device proximal to the individual patient when the device measures are
6 recorded; and

7 storing the received monitoring set in the database as part of a patient care
8 record for the individual patient.

1 16. A method according to Claim 15, further comprising:
2 defining a set of further indicator thresholds, each indicator threshold
3 corresponding to a quantifiable physiological measure used to detect a
4 pathophysiology indicative of diseases other than myocardial ischemia;
5 comparing each patient status change to each such further indicator
6 threshold corresponding to the same type of patient information as the at least one
7 recorded measure and the at least one other recorded measure; and
8 testing each patient status change against each such further indicator
9 threshold corresponding to the same type of patient information as the recorded
10 measures which were compared.

1 17. A method according to Claim 13, further comprising:
2 determining a change in patient status by comparing at least one recorded
3 quality of life measure to at least one other corresponding recorded quality of life
4 measure.

1 18. A method according to Claim 13, further comprising:
2 defining a set of stickiness indicators for each type of patient information,
3 each stickiness indicator corresponding to a temporal limit related to a program of
4 patient diagnosis or treatment;
5 comparing a time span occurring between each patient status change for
6 each recorded measure to the stickiness indicator relating to the same type of
7 patient information as the recorded measure being compared; and
8 determining a revised program of patient diagnosis or treatment
9 responsive to each patient status change occurring subsequent to a time span
10 exceeding the stickiness indicator.

1 19. A method according to Claim 13, further comprising:
2 retrieving the plurality of monitoring sets from one of a patient care record
3 for an individual patient, a peer group, and a overall patient population.

1 20. A method according to Claim 13, further comprising:
2 retrieving a reference baseline comprising recorded measures which each
3 relate to patient information recorded during an initial time period and comprise
4 either medical device measures or derived measures calculable therefrom; and
5 obtaining at least one of the at least one recorded measure and the at least
6 one other recorded measure from the reference baseline.

1 21. An automated method according to Claim 13, wherein the
2 indicator thresholds relate to at least one of a finding of reduced exercise capacity,
3 respiratory distress and angina.

4 22. A method according to Claim 21, wherein the indicator thresholds
5 relating to the finding of reduced exercise capacity are selected from the group
6 consisting of decreased cardiac output, decreased mixed venous oxygen score,
7 and decreased patient activity score.

1 23. A method according to Claim 21, wherein the indicator thresholds
2 relating to the finding of respiratory distress are selected from the group
3 consisting of increased respiratory rate, decreased transthoracic impedance, and
4 increased pulmonary artery diastolic pressure.

1 24. A method according to Claim 21, wherein the indicator thresholds
2 relating to the finding of angina are selected from the group consisting of
3 increased ST segment, decreased ST segment, increased myocardial creatinine
4 kinase, increased troponin, increased coronary sinus lactate, changed myocardial
5 wall motion, ventricular tachycardia, T wave changes, and QRS changes.

1 25. A computer-readable storage medium holding code for diagnosing
2 and monitoring myocardial ischemia for automated remote patient care,
3 comprising:
4 code for storing a plurality of monitoring sets which each comprise
5 recorded measures relating to patient information recorded on a substantially
6 continuous basis in a database;

7 code for retrieving a plurality of the monitoring sets from the database;
8 code for determining a patient status change by comparing at least one
9 recorded measure and time from each of the monitoring sets to at least one other
10 recorded measure and time from another monitoring set with both recorded
11 measures relating to a same type of patient information recorded at different
12 times; and
13 code for testing each patient status change for an absence, an onset, a
14 progression, a regression, and a status quo of myocardial ischemia against a
15 predetermined indicator threshold, including at least one hysteresis threshold,
16 corresponding to a same type of patient information as the recorded measures
17 which were compared, the indicator threshold corresponding to a quantifiable
18 physiological measure of a pathophysiology indicative of myocardial ischemia
19 and the hysteresis threshold corresponding to a diagnosis or treatment based on a
20 duration and degree of the patient status change.

1 26. A storage medium according to Claim 25, further comprising:
2 code for managing the myocardial ischemia and outcomes thereof through
3 administration of at least one of anticoagulation, antiplatelet drugs, beta-blockade,
4 coronary vasodilators, afterload reduction, lipid lowering drugs, electrical
5 therapies, and mechanical therapies.

1 27. A storage medium according to Claim 25, further comprising:
2 code for periodically receiving a monitoring set for an individual patient,
3 each recorded measure in the monitoring set having been recorded by at least one
4 of a medical device adapted to be implanted in an individual patient and an
5 external medical device proximal to the individual patient when the device
6 measures are recorded; and
7 code for storing the received monitoring set in the database as part of a
8 patient care record for the individual patient.

1 28. A storage medium according to Claim 27, further comprising:

2 code for defining a set of further indicator thresholds, each indicator
3 threshold corresponding to a quantifiable physiological measure used to detect a
4 pathophysiology indicative of diseases other than myocardial ischemia;
5 code for comparing each patient status change to each such further
6 indicator threshold corresponding to the same type of patient information as the at
7 least one recorded measure and the at least one other recorded measure; and
8 code for testing each patient status change against each such further
9 indicator threshold corresponding to the same type of patient information as the
10 recorded measures which were compared..

1 29. A storage medium according to Claim 25, further comprising:
2 code for determining a change in patient status by comparing at least one
3 recorded quality of life measure to at least one other corresponding recorded
4 quality of life measure.

1 30. A storage medium according to Claim 25, further comprising:
2 code for defining a set of stickiness indicators for each type of patient
3 information, each stickiness indicator corresponding to a temporal limit related to
4 a program of patient diagnosis or treatment;
5 code for comparing a time span occurring between each patient status
6 change for each recorded measure to the stickiness indicator relating to the same
7 type of patient information as the recorded measure being compared; and
8 code for determining a revised program of patient diagnosis or treatment
9 responsive to each patient status change occurring subsequent to a time span
10 exceeding the stickiness indicator.

1 31. A storage medium according to Claim 25, further comprising:
2 code for retrieving the plurality of monitoring sets from one of a patient
3 care record for an individual patient, a peer group, and a overall patient
4 population.

1 32. A storage medium according to Claim 25, further comprising:

2 code for retrieving a reference baseline comprising recorded measures
3 which each relate to patient information recorded during an initial time period and
4 comprise either medical device measures or derived measures calculable
5 therefrom; and
6 code for obtaining at least one of the at least one recorded measure and the
7 at least one other recorded measure from the reference baseline.

8 33. An automated collection and analysis patient care system for
9 diagnosing and monitoring myocardial ischemia and outcomes thereof,
10 comprising:

11 a database storing patient monitoring information, comprising:
12 a plurality of monitoring sets, each monitoring set comprising
13 recorded measures which each relate to patient information and comprise either
14 medical device measures or derived measures calculable therefrom, the medical
15 device measures having been regularly recorded on a substantially continuous
16 basis;

17 a set of stored indicator thresholds, each indicator threshold
18 corresponding to a quantifiable physiological measure of a pathophysiology
19 indicative of myocardial ischemia and relating to a same type of patient
20 information as at least one of the recorded measures;

21 a server diagnosing a myocardial ischemia finding comprising an absence,
22 an onset, a progression, a regression, and a status quo of myocardial ischemia,
23 comprising:

24 a receiver retrieving a plurality of the monitoring sets from the
25 database;

26 an analysis module determining a change in patient status by
27 comparing at least one recorded measure and time to at least one other recorded
28 measure and time from another monitoring set with both recorded measures
29 relating to a same type of patient information recorded at different times; and

30 a comparison module comparing each patient status change to the
31 indicator threshold, including at least one hysteresis threshold, corresponding to a
32 same type of patient information as the recorded measures which were compared

33 and the hysteresis threshold corresponding to a diagnosis or treatment based on a
34 duration and degree of the patient status change.

1 34. A system according to Claim 33, wherein the device measures are
2 recorded by at least one of a medical device adapted to be implanted in an
3 individual patient and an external medical device proximal to the individual
4 patient when the device measures are recorded.

1 35. A system according to Claim 33, wherein each of the monitoring
2 sets comprises recorded measures relating to patient information solely for the
3 individual patient, further comprising:

4 a database module retrieving each monitoring set from a patient care
5 record for the individual patient and obtaining the at least one recorded measure
6 and the at least one other recorded measure from the retrieved monitoring sets.

1 36. A system according to Claim 33, wherein each of the monitoring
2 sets comprises recorded measures relating to patient information for a peer group
3 of patients to which the individual patient belongs, further comprising:

4 a database module retrieving at least one monitoring set from a patient
5 care record for the individual patient, retrieving at least one other monitoring set
6 from a patient care record in the same patient peer group, and obtaining the at
7 least one recorded measure from the at least one monitoring set and the at least
8 one other recorded measure from the at least one other monitoring set.

1 37. A system according to Claim 33, wherein each of the monitoring
2 sets comprises recorded measures relating to patient information for a general
3 population of patients, further comprising:

4 a database module retrieving at least one monitoring set from a patient
5 care record for the individual patient, retrieving at least one other monitoring set
6 from a patient care record in the overall patient population, and obtaining the at
7 least one recorded measure from the at least one monitoring set and the at least
8 one other recorded measure from the at least one other monitoring set.

1 38. A system according to Claim 33, further comprising:
2 a database submodule further storing a reference baseline comprising
3 recorded measures which each relate to patient information recorded by the
4 medical device adapted to be implanted during an initial time period and comprise
5 either device measures recorded by the medical device adapted to be implanted or
6 derived measures calculable therefrom; and
7 a database submodule obtaining at least one of the at least one recorded
8 measure and the at least one other recorded measure from the reference baseline.

1 39. A system according to Claim 38, wherein the reference baseline
2 comprises recorded measures relating to patient information for one of the
3 individual patients solely, a peer group of patients to which the individual patient
4 belongs, and a general population of patients.

1 40. A system according to Claim 33, wherein the indicator thresholds
2 relate to *a priori* limits selected from the group comprising ST segment elevation,
3 myocardial band creatinine kinase mass, and troponin levels.

1 41. A system according to Claim 40, wherein the ST segment
2 elevation exceeds substantially 2.0 mm in an absence of a QRS duration greater
3 than or equal to substantially 120 ms, the myocardial band creatinine kinase mass
4 exceeds substantially 5 ng/ml, and the troponin-I exceeds substantially 0.5 ng/ml.

1 42. A system according to Claim 33, the comparison module further
2 comprising:
3 a comparison submodule grading the comparisons between each patient
4 status change and corresponding indicator threshold on a fixed scale based on a
5 degree of deviation from the indicator threshold; and
6 a comparison submodule determining an overall patient status change by
7 performing a summation over the individual graded comparisons.

1 43. A system according to Claim 33, the comparison module further
2 comprising:

3 a module determining probabilistic weightings of the comparisons
4 between each patient status change and corresponding indicator threshold based
5 on a statistical deviation and trends via linear fits from the indicator threshold;
6 and
7 a comparison submodule determining an overall patient status change by
8 performing a summation over the individual graded comparisons.

1 44. A system according to Claim 33, wherein each monitoring set
2 further comprises quality of life and symptom measures recorded by the
3 individual patient, the server further comprising:
4 a quality of life module determining a change in patient status by
5 comparing at least one recorded quality of life measure to at least one other
6 corresponding recorded quality of life measure; and
7 the server incorporating each patient status change in quality of life into
8 the myocardial ischemia finding to either refute or support the diagnosis.

1 45. A system according to Claim 33, further comprising:
2 a set of stored further indicator thresholds, each indicator threshold
3 corresponding to a quantifiable physiological measure used to detect a
4 pathophysiology indicative of diseases other than myocardial ischemia of disease;
5 and
6 a diagnostic submodule diagnosing a finding of a disease other than
7 myocardial ischemia, the comparison module further comprising comparing each
8 patient status change to each such further indicator threshold corresponding to the
9 same type of patient information as the at least one recorded measure and the at
10 least one other recorded measure.

1 46. A system according to Claim 33, further comprising:
2 a set of stickiness indicators, each indicator threshold corresponding to a
3 temporal limit related to a course of patient care; and

4 a feedback module comparing a time span between each patient status
5 change for each recorded measure to the stickiness indicator corresponding to the
6 same type of patient information as the recorded measure being compared.

1 47. A system according to Claim 33, further comprising:
2 a feedback module providing automated feedback to the individual patient
3 when a myocardial ischemia finding is indicated.

1 48. A system according to Claim 47, further comprising:
2 the feedback module performing an interactive dialogue between the
3 individual patient and the patient care system regarding a medical condition of the
4 individual patient.

1 49. A method for diagnosing and monitoring myocardial ischemia and
2 outcomes using an automated collection and analysis patient care system,
3 comprising:

4 storing a plurality of monitoring sets in a database, each monitoring set
5 comprising recorded measures which each relate to patient information and
6 comprise either medical device measures or derived measures calculable
7 therefrom, the medical device measures having been regularly recorded on a
8 substantially continuous basis;

9 retrieving a plurality of the monitoring sets from the database;
10 defining a set of indicator thresholds, each indicator threshold
11 corresponding to a quantifiable physiological measure of a pathophysiology
12 indicative of myocardial ischemia and relating to a same type of patient
13 information as at least one of the recorded measures; and

14 diagnosing a myocardial ischemia finding comprising an absence, an
15 onset, a progression, a regression, and a status quo of myocardial ischemia,
16 comprising:

17 determining a change in patient status by comparing at least one
18 recorded measure and time to at least one other recorded measure and time from

19 another monitoring set with both recorded measures relating to a same type of
20 patient information recorded at different times; and
21 comparing each patient status change to the indicator threshold,
22 including at least one hysteresis threshold, corresponding to a same type of patient
23 information as the recorded measures which were compared and the hysteresis
24 threshold corresponding to a diagnosis or treatment based on a duration and
25 degree of the patient status change.

1 50. A method according to Claim 49, wherein the device measures are
2 recorded by at least one of a medical device adapted to be implanted in an
3 individual patient and an external medical device proximal to the individual
4 patient when the device measures are recorded.

1 51. A method according to Claim 49, wherein each of the monitoring
2 sets comprises recorded measures relating to patient information solely for the
3 individual patient, further comprising:
4 retrieving each monitoring set from a patient care record for the individual
5 patient; and
6 obtaining the at least one recorded measure and the at least one other
7 recorded measure from the retrieved monitoring sets.

1 52. A method according to Claim 49, wherein each of the monitoring
2 sets comprises recorded measures relating to patient information for a peer group
3 of patients to which the individual patient belongs, further comprising:
4 retrieving at least one monitoring set from a patient care record for the
5 individual patient;
6 retrieving at least one other monitoring set from a patient care record in
7 the same patient peer group; and
8 obtaining the at least one recorded measure from the at least one
9 monitoring set and the at least one other recorded measure from the at least one
10 other monitoring set.

1 53. A method according to Claim 49, wherein each of the monitoring
2 sets comprises recorded measures relating to patient information for a general
3 population of patients, further comprising:

4 retrieving at least one monitoring set from a patient care record for the
5 individual patient;

6 retrieving at least one other monitoring set from a patient care record in
7 the overall patient population; and

8 obtaining the at least one recorded measure from the at least one
9 monitoring set and the at least one other recorded measure from the at least one
10 other monitoring set.

1 54. A method according to Claim 49, further comprising:

2 retrieving a reference baseline comprising recorded measures which each
3 relate to patient information recorded by the medical device adapted to be
4 implanted during an initial time period and comprise either device measures
5 recorded by the medical device adapted to be implanted or derived measures
6 calculable therefrom; and

7 obtaining at least one of the at least one recorded measure and the at least
8 one other recorded measure from the reference baseline.

1 55. A method according to Claim 54, wherein the reference baseline
2 comprises recorded measures relating to patient information for one of the
3 individual patients solely, a peer group of patients to which the individual patient
4 belongs, and a general population of patients.

1 56. A method according to Claim 49, wherein the indicator thresholds
2 relate to *a priori* limits selected from the group comprising ST segment elevation,
3 myocardial band creatinine kinase mass, and troponin levels.

1 57. A method according to Claim 56, wherein the ST segment
2 elevation exceeds substantially 2.0 mm in an absence of a QRS duration greater

3 than or equal to substantially 120 ms, the myocardial band creatinine kinase mass
4 exceeds substantially 5 ng/ml, and the troponin-I exceeds substantially 0.5 ng/ml.

1 58. A method according to Claim 49, the operation of comparing each
2 patient status change further comprising:

3 grading the comparisons between each patient status change and
4 corresponding indicator threshold on a fixed scale based on a degree of deviation
5 from the indicator threshold; and

6 determining an overall patient status change by performing a summation
7 over the individual graded comparisons.

1 59. A method according to Claim 49, the operation of comparing each
2 patient status change further comprising:

3 determining probabilistic weightings of the comparisons between each
4 patient status change and corresponding indicator threshold based on a statistical
5 deviation and trends via linear fits from the indicator threshold; and

6 determining an overall patient status change by performing a summation
7 over the individual graded comparisons.

1 60. A method according to Claim 49, wherein each monitoring set
2 further comprises quality of life and symptom measures recorded by the
3 individual patient, the operation of diagnosing a myocardial ischemia finding
4 further comprising:

5 determining a change in patient status by comparing at least one recorded
6 quality of life measure to at least one other corresponding recorded quality of life
7 measure; and

8 incorporating each patient status change in quality of life into the
9 myocardial ischemia finding to either refute or support the diagnosis.

1 61. A method according to Claim 49, further comprising:
2 defining a set of further indicator thresholds, each indicator threshold
3 corresponding to a quantifiable physiological measure used to detect a
4 pathophysiology indicative of diseases other than myocardial ischemia; and

5 diagnosing a finding of the disease other than myocardial ischemia,
6 comprising comparing each patient status change to each such further indicator
7 threshold corresponding to the same type of patient information as the at least one
8 recorded measure and the at least one other recorded measure.

1 62. A method according to Claim 49, further comprising:
2 defining a set of stickiness indicators, each indicator threshold
3 corresponding to a temporal limit related to a course of patient care; and
4 comparing a time span between each patient status change for each
5 recorded measure to the stickiness indicator corresponding to the same type of
6 patient information as the recorded measure being compared.

1 63. A method according to Claim 49, further comprising:
2 providing automated feedback to the individual patient when a myocardial
3 ischemia finding is indicated.

1 64. A method according to Claim 63, further comprising:
2 performing an interactive dialogue between the individual patient and the
3 patient care system regarding a medical condition of the individual patient.

4 65. A computer-readable storage medium holding code for diagnosing
5 and monitoring myocardial ischemia using an automated collection and analysis
6 patient care system, comprising:
7 code for storing a plurality of monitoring sets in a database, each
8 monitoring set comprising recorded measures which each relate to patient
9 information and comprise either medical device measures or derived measures
10 calculable therefrom, the medical device measures having been regularly recorded
11 on a substantially continuous basis;
12 code for retrieving a plurality of the monitoring sets from the database;
13 code for defining a set of indicator thresholds, each indicator threshold
14 corresponding to a quantifiable physiological measure of a pathophysiology
15 indicative of myocardial ischemia and relating to a same type of patient
16 information as at least one of the recorded measures; and

17 code for diagnosing a myocardial ischemia finding comprising an absence,
18 an onset, a progression, a regression, and a status quo of myocardial ischemia,
19 comprising:

20 code for determining a change in patient status by comparing at
21 least one recorded measure and time to at least one other recorded measure and
22 time from another monitoring set with both recorded measures relating to a same
23 type of patient information recorded at different times; and

24 code for comparing each patient status change to the indicator
25 threshold, including at least one hysteresis threshold, corresponding to a same
26 type of patient information as the recorded measures which were compared and
27 the hysteresis threshold corresponding to a treatment or diagnosis based on a
28 duration and degree of the patient status change.

1 66. A storage medium according to Claim 65, wherein each of the
2 monitoring sets comprises recorded measures relating to patient information
3 solely for the individual patient, further comprising:

4 code for retrieving each monitoring set from a patient care record for the
5 individual patient; and

6 code for obtaining the at least one recorded measure and the at least one
7 other recorded measure from the retrieved monitoring sets.

1 67. A storage medium according to Claim 65, wherein each of the
2 monitoring sets comprises recorded measures relating to patient information for a
3 peer group of patients to which the individual patient belongs, further comprising:

4 code for retrieving at least one monitoring set from a patient care record
5 for the individual patient;

6 code for retrieving at least one other monitoring set from a patient care
7 record in the same patient peer group; and

8 code for obtaining the at least one recorded measure from the at least one
9 monitoring set and the at least one other recorded measure from the at least one
10 other monitoring set.

1 68. A storage medium according to Claim 65, wherein each of the
2 monitoring sets comprises recorded measures relating to patient information for a
3 general population of patients, further comprising:
4 code for retrieving at least one monitoring set from a patient care record
5 for the individual patient;
6 code for retrieving at least one other monitoring set from a patient care
7 record in the overall patient population; and
8 code for obtaining the at least one recorded measure from the at least one
9 monitoring set and the at least one other recorded measure from the at least one
10 other monitoring set.

1 69. A storage medium according to Claim 65, further comprising:
2 code for retrieving a reference baseline comprising recorded measures
3 which each relate to patient information recorded by the medical device adapted
4 to be implanted during an initial time period and comprise either device measures
5 recorded by the medical device adapted to be implanted or derived measures
6 calculable therefrom; and
7 code for obtaining at least one of the at least one recorded measure and the
8 at least one other recorded measure from the reference baseline.

1 70. A storage medium according to Claim 65, the operation of
2 comparing each patient status change further comprising:
3 code for grading the comparisons between each patient status change and
4 corresponding indicator threshold on a fixed scale based on a degree of deviation
5 from the indicator threshold; and
6 code for determining an overall patient status change by performing a
7 summation over the individual graded comparisons.

1 71. A storage medium according to Claim 65, the operation of
2 comparing each patient status change further comprising:

3 code for determining probabilistic weightings of the comparisons between
4 each patient status change and corresponding indicator threshold based on a
5 statistical deviation and trends via linear fits from the indicator threshold; and
6 code for determining an overall patient status change by performing a
7 summation over the individual graded comparisons.

1 72. A storage medium according to Claim 65, wherein each
2 monitoring set further comprises quality of life and symptom measures recorded
3 by the individual patient, the operation of diagnosing a myocardial ischemia
4 finding further comprising:

5 code for determining a change in patient status by comparing at least one
6 recorded quality of life measure to at least one other corresponding recorded
7 quality of life measure; and
8 code for incorporating each patient status change in quality of life into the
9 myocardial ischemia finding to either refute or support the diagnosis.

1 73. A storage medium according to Claim 65, further comprising:
2 code for defining a set of further indicator thresholds, each indicator
3 threshold corresponding to a quantifiable physiological measure used to detect a
4 pathophysiology indicative of diseases other than myocardial ischemia; and
5 code for diagnosing a finding of the disease other than myocardial
6 ischemia, comprising comparing each patient status change to each such further
7 indicator threshold corresponding to the same type of patient information as the at
8 least one recorded measure and the at least one other recorded measure.

1 74. A storage medium according to Claim 65, further comprising:
2 code for defining a set of stickiness indicators, each indicator threshold
3 corresponding to a temporal limit related to a course of patient care; and
4 code for comparing a time span between each patient status change for
5 each recorded measure to the stickiness indicator corresponding to the same type
6 of patient information as the recorded measure being compared.

1 75. A storage medium according to Claim 65, further comprising:

2 code for providing automated feedback to the individual patient when a
3 myocardial ischemia finding is indicated.

1 76. A storage medium according to Claim 75, further comprising:
2 code for performing an interactive dialogue between the individual patient
3 and the patient care system regarding a medical condition of the individual
4 patient.

1 77. An automated patient care system for diagnosing and monitoring
2 myocardial ischemia and outcomes thereof, comprising:

3 a medical device regularly recording measures relating to at least one of
4 monitoring angina, reduced exercise capacity and respiratory distress;
5 a database maintaining information for an individual patient, comprising
6 organizing a plurality of monitoring sets in a database, and storing the recorded
7 measures for the individual patient on a substantially continuous basis into a
8 monitoring set in the database;

9 a server evaluating a finding of at least one of an absence, an onset, a
10 progression, a regression, and a status quo of myocardial ischemia, comprising:

11 a comparison module determining a patient status change by
12 comparing at least one recorded measure and time from each of the monitoring
13 sets to at least one other recorded measure and time from another monitoring set
14 with both recorded measures relating to a same type of patient information
15 recorded at different times; and

16 an analysis module testing each patient status change against an
17 indicator threshold, including at least one hysteresis threshold, corresponding to a
18 same type of patient information as the recorded measures which were compared,
19 a predetermined indicator threshold corresponding to a quantifiable physiological
20 measure of a pathophysiology indicative of angina, reduced exercise capacity and
21 respiratory distress and the hysteresis threshold corresponding to a diagnosis or
22 treatment based on a duration and degree of the patient status change.

1 78. A system according to Claim 77, wherein the indicator thresholds
2 relating to angina are selected from the group consisting of increased ST segment,
3 decreased ST segment, increased myocardial creatinine kinase, increased
4 troponin, increased coronary sinus lactate, changed myocardial wall motion,
5 ventricular tachycardia, T wave changes, and QRS changes.

1 79. A system according to Claim 77, wherein the indicator thresholds
2 relating to reduced exercise capacity are selected from the group consisting of
3 decreased cardiac output, decreased mixed venous oxygen score, decreased
4 patient activity score, increased pulmonary artery diastolic pressure, increased
5 respiratory rate and decreased transthoracic impedance.

1 80. A system according to Claim 77, wherein the indicator thresholds
2 relating to respiratory distress are selected from the group consisting of increased
3 pulmonary artery diastolic pressure, increased respiratory rate, decreased
4 transthoracic impedance, decreased cardiac output, decreased mixed venous
5 oxygen score, and decreased patient activity score.

1 81. A method for diagnosing and monitoring myocardial ischemia and
2 outcomes thereof in an automated patient care system, comprising:
3 regularly recording measures relating to at least one of monitoring angina,
4 reduced exercise capacity and respiratory distress;
5 maintaining information for an individual patient, comprising:
6 organizing a plurality of monitoring sets in a database;
7 storing the recorded measures for the individual patient on a
8 substantially continuous basis into a monitoring set in the database;
9 periodically retrieving a plurality of the monitoring sets from the database;
10 evaluating a finding of at least one of an absence, an onset, a progression,
11 a regression, and a status quo of myocardial ischemia, comprising:
12 determining a patient status change by comparing at least one
13 recorded measure and time from each of the monitoring sets to at least one other
14 recorded measure and time from another monitoring set with both recorded

15 measures relating to a same type of patient information recorded at different
16 times; and
17 testing each patient status change against an indicator threshold,
18 including at least one hysteresis threshold, corresponding to a same type of patient
19 information as the recorded measures which were compared, the indicator
20 threshold corresponding to a quantifiable physiological measure of a
21 pathophysiology indicative of angina, reduced exercise capacity and respiratory
22 distress and the hysteresis threshold corresponding to a diagnosis or treatment
23 based on a duration and degree of the patient status change.

1 82. A method according to Claim 81, wherein the indicator thresholds
2 relating to angina are selected from the group consisting of increased ST segment,
3 decreased ST segment, increased myocardial creatinine kinase, increased
4 troponin, increased coronary sinus lactate, changed myocardial wall motion,
5 ventricular tachycardia, T wave changes, and QRS changes.

1 83. A method according to Claim 81, wherein the indicator thresholds
2 relating to reduced exercise capacity are selected from the group consisting of
3 decreased cardiac output, decreased mixed venous oxygen score, decreased
4 patient activity score, increased pulmonary artery diastolic pressure, increased
5 respiratory rate and decreased transthoracic impedance.

1 84. A method according to Claim 81, wherein the indicator thresholds
2 relating to respiratory distress are selected from the group consisting of increased
3 pulmonary artery diastolic pressure, increased respiratory rate, decreased
4 transthoracic impedance, decreased cardiac output, decreased mixed venous
5 oxygen score, and decreased patient activity score.

1 85. A computer-readable storage medium holding code for diagnosing
2 and monitoring myocardial ischemia in an automated patient care system,
3 comprising:
4 code for regularly recording measures relating to at least one of
5 monitoring angina, reduced exercise capacity and respiratory distress;

6 code for maintaining information for an individual patient, comprising:
7 code for organizing a plurality of monitoring sets in a database;
8 code for storing the recorded measures for the individual patient on
9 a substantially continuous basis into a monitoring set in the database;
10 code for periodically retrieving a plurality of the monitoring sets from the
11 database;
12 code for evaluating a finding of at least one of an absence, an onset, a
13 progression, a regression, and a status quo of myocardial ischemia, comprising:
14 code for determining a patient status change by comparing at least
15 one recorded measure and time from each of the monitoring sets to at least one
16 other recorded measure and time from another monitoring set with both recorded
17 measures relating to a same type of patient information recorded at different
18 times; and
19 code for testing each patient status change against an indicator
20 threshold, including at least one hysteresis threshold, corresponding to a same
21 type of patient information as the recorded measures which were compared, the
22 indicator threshold corresponding to a quantifiable physiological measure of a
23 pathophysiology indicative of angina, reduced exercise capacity and respiratory
24 distress and the hysteresis threshold corresponding to a diagnosis or treatment
25 based on a duration and degree of the patient status change.